

Table X. Reported spills from Teck facilities to the Columbia River, as compiled from various sources of information.

year	constituent	spill date	<sup>1</sup> March 2003 Upper Columbia River Expanded Site Inspection Report, EPA Region 10	<sup>2</sup> February 20, 2004 Colville Confederated Tribes Briefing Document, based on documents provided by the Canadian government	<sup>3</sup> September 21, 2007 Upper Columbia River Remedial Investigation and Feasibility Study Work Plan	Additional Information from Discovery (2011)	Document Bates No.
			quantity released	quantity released	location	quantity released	permit limit*
1980	Hg	March 19				7000 kg d <sup>-1</sup>	0.258 kg d <sup>-1</sup>
	NH <sub>3</sub> HSO <sub>3</sub>	July 13				500 gallons	
	H <sub>2</sub> SO <sub>4</sub> (93%)	November 1				30 tonnes <sup>†</sup>	
	P <sub>2</sub> O <sub>5</sub>	November 4				24 tonnes	
1981	Zn	April 23				9500 kg d <sup>-1</sup>	9070 kg d <sup>-1</sup>
	H <sub>2</sub> SO <sub>4</sub> (93%)	May 4				25-30 tonnes	
	NH <sub>3</sub> HSO <sub>3</sub>	May 13				4000 gallons	
	H <sub>2</sub> SO <sub>4</sub> (93%)	August 4				53 tonnes	
	H <sub>2</sub> SO <sub>4</sub> (93%)	October 6				40 tonnes	
1982							
1983							
1984							
1985							
1986							
1987	H <sub>2</sub> SO <sub>4</sub> (50%)	September 2	15 tonnes				
1988	Zn solution (150 g L <sup>-1</sup> )	November 25	5 tonnes**				
1989	As	July 17	Unknown**				
	Gypsum and H <sub>3</sub> PO <sub>4</sub>	July 16	Unknown**				
	Neutral thickener	May 1	60,000 L				

<sup>1</sup> U.S. Environmental Protection Agency. *Upper Columbia River Expanded Site Inspection Report, Northeast Washington, TDD: 01-02-0028*. March 2003. **Information based on Environment Canada Spilltracker Database, as provided in McDonald 1997, and personal communication with Environment Canada staff.**

<sup>2</sup> Teck Cominco Metals Ltd. *Trail Facility: Massive Pollution, Gross Non-compliance and Government Lack of Enforcement, a Briefing Document*. Submitted to the U.S. State Department and the U.S. Environmental Protection Agency by the Confederated Tribes of the Colville Reservation (CCT); February 20, 2004. **Information based on the Freedom of Information and Privacy Act (FOIPA) documents produced by the Canadian Government to CCT.**

<sup>3</sup> *Upper Columbia River: Work Plan for the Remedial Investigation and Feasibility Study*. Prepared for Teck Cominco American Incorporated by Integral Consulting, Inc. and Parametrix in association with HydroQual, ENTRIX, HDR-|-FISHPRO and Archeological Investigations Northwest; September 21, 2007. **Information based on facility information provided by Teck Cominco American Incorporated and records maintained by the B.C. Ministry of the Environment.**

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			quantity released	quantity released	location	quantity released	permit limit*	
	Yellow substance	August 18	305 meters long					
1990	Hg	March 6	14 kg					
	Zn	September 4	Unknown (electrolyte)					
	Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	January 20	unknown (93%)**					
		April 26	909 L	300-400 gal (93%)	Sewer 08			
June 11			> 30 tonnes	Outfall III				
August 23		16,000 L						
1991	Cd	August 24						
		May 7		0.070 mg L <sup>-1</sup>	Outfall III		0.05 mg L <sup>-1</sup> (permit limit)	BCE 000456-464
		May 7		0.090 mg L <sup>-1</sup>	Outfall II		0.07 mg L <sup>-1</sup> (permit limit)	BCE 000456-464
		November 5				0.07 mg L <sup>-1</sup>	0.05 mg L <sup>-1</sup>	
	Hg	March 6		0.056 mg L <sup>-1</sup>	Outfall 07		0.035 mg L <sup>-1</sup> (permit limit)	BCE 000468-472
		April 15					Outfall IV; 0.015mg L <sup>-1</sup> (quantity released), 0.010 mg L <sup>-1</sup> (permit limit)	BCE 000456-464
		June 18			Outfall IV	0.014 mg L <sup>-1</sup>	0.01 mg L <sup>-1</sup>	Corrected date June 18; Outfall IV
	Pb	February 5		0.53 mg L <sup>-1</sup>	Outfall II		0.50 mg L <sup>-1</sup> (permit limit)	BCE 000468-472
		March 6		1.80 mg L <sup>-1</sup>	Outfall 07		1.00 mg L <sup>-1</sup> (permit limit)	BCE 000468-472
		March 6		0.56 mg L <sup>-1</sup>	Outfall II		0.50 mg L <sup>-1</sup> (permit limit)	BCE 000468-472
		August 14				1.7 mg L <sup>-1</sup>	1 mg L <sup>-1</sup>	
	Zn	January 30	576 kg					
		February 11	4,546 L (sulfide residue)					
		April 21	220 L (solution 160 g L <sup>-1</sup> )					
		September 17				8.5 mg L <sup>-1</sup>	5 mg L <sup>-1</sup>	
		October 1				8.2 mg L <sup>-1</sup>	5 mg L <sup>-1</sup>	
		November 5				5.8 mg L <sup>-1</sup>	5 mg L <sup>-1</sup>	
		December 3				7.3 mg L <sup>-1</sup>	5 mg L <sup>-1</sup>	
		December 7	881 L (electrolyte)					
	December 20						Outfall III; 1120.2 kg (24-hour composite Outfall III), 1165.3 kg (all sewers) (quantity released); 927 kg day <sup>-1</sup> (all sewers) (permit limit)	BCE 000429, BCE 000430-432
Copper Sulfate (CuSO <sub>4</sub> )	February 5	3,000 L						
Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	March 16	4.54 tonnes						
	April 13	1,000 L (15%)						

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			quantity released	quantity released	location	permit limit*	
		April 13	Unknown (160 g L <sup>-1</sup> )				
		September 16	132 to 176 L				
	Phosphoric acid (H <sub>3</sub> PO <sub>4</sub> )	February 7	0.9 to 1.8 tonnes				
		April 2	15 tonnes				
		April 6	1.35 tonnes				
		June 15	2 tonnes (weak)				
		June 21	unknown				
		June 24	2.72 to 3.63 tonnes (27%)				
	Phosphates (PO <sub>4</sub> <sup>3-</sup> )	June 21	6.7 tonnes				
	Total suspended solids (TSS)	December 20		1165.3 kg d <sup>-1</sup>	Outfall III		
		January 16		157.0 mg L <sup>-1</sup>	Outfall II		35.0 mg L <sup>-1</sup> (permit limit)
		September 17				39 mg L <sup>-1</sup>	
		October 1				12475 mg L <sup>-1</sup>	
		November 5				10989 mg L <sup>-1</sup>	
		December 3				18670 mg L <sup>-1</sup>	
	Flow	June 18		426600 m <sup>3</sup> d <sup>-1</sup>	Outfall II		
	Partially treated slag	August 24		50 tonnes (approximate)	Columbia River		
	Zinc slurry/ pressure leach slurry	May 13	22.7 L				
		December 20	2,273 L				
	NaHSO <sub>4</sub>	September 16	20 L min <sup>-1</sup> , quantity unknown				
	NH <sub>3</sub> -N	May 13	90.9 L (ammonia)				
		August 14				45 mg L <sup>-1</sup>	
		September 17				40 mg L <sup>-1</sup>	
		November 5				40 mg L <sup>-1</sup>	
	Coal dust/ water	August 1	220 L				
	Furnace oil	September 9	50 tonnes				
1992	Hg	June 24				6.8-10 kg d <sup>-1</sup>	1.05 kg d <sup>-1</sup>
		September 30	15 kg			60 kg d <sup>-1</sup>	0.55 kg d <sup>-1</sup>
		October 1				60 kg d <sup>-1</sup>	0.55 kg d <sup>-1</sup>
		December 2		0.014 mg L <sup>-1</sup>	Outfall III	0.014 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>
		December 16		0.021 mg L <sup>-1</sup>	Outfall III	0.21 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>
	Zn	April 20	25,000 L (electrolyte)				
		May 23	350 L (electrolyte)**			214.1 kg d <sup>-1</sup>	63.7 kg d <sup>-1</sup>
	H <sub>2</sub> SO <sub>4</sub> (93%)	January 8				100-150 L	
		March 3				NA	
		March 7				1 gallon	
		March 19				20 gallons	
		April 14				30 gallons	
		April 18				100 gallons	
		August 4				5-10 gallons	
		November 3	434 kg			450 kg	
		December 16	25 to 30 tonnes			2.5 tonnes	
	H <sub>2</sub> SO <sub>4</sub> (93.5%)	June 8				20 L	

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			quantity released	quantity released	location	quantity released	permit limit*	
	H <sub>2</sub> SO <sub>4</sub> (98 %)	September 5				10-15 gallons		
	Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	February 6 February 22 July 14 August 3 October 2 December 4	Unknown**			400 L 250 gallons 20 L 20-50 gallons 10-15 gallons		
	H <sub>3</sub> PO <sub>4</sub> (21 %)	May 25 May 26	5 tonnes			5 tonnes		
	H <sub>3</sub> PO <sub>4</sub> (27%)	May 8				NA		
	Phosphoric acid (H <sub>3</sub> PO <sub>4</sub> )	March 1 March 14 April 20 June 26 July 10 July 11 August 10 September 4	unknown			NA NA NA 1.5 tonnes NA 1500 L NA		
	Phosphates (PO <sub>4</sub> <sup>3-</sup> )	March 11 April 2	unknown unknown					
	NH <sub>3</sub> SO <sub>4</sub>	April 9				150 gallons		
	SO <sub>3</sub>	May 15				40 gallons		
	Ammonium bisulphite (NH <sub>4</sub> HSO <sub>3</sub> )	June 4 September 14 December 20 December 22				15 gallons 30-40 gallons 15-20 gallons 400 L		
	Ammonium sulfate (NH <sub>4</sub> SO <sub>4</sub> )	December 8 December 11	12.3 tonnes 12 tonnes			12 tonnes		
	SO <sub>4</sub>	October 2				50-100 gallons		
	Sulfide leach residue	April 22	Unknown**					
	Return acid, calcine	July 1				20 gallons		
	ESSO Teresso 68 oil/ Compressor oil	July 23 July 28	25 L			25-30 L		
	Transformer oil Voltesso 35	December 17				200 L		
1993	As	September 4	60 to 65 kg (dissolved)				Outfall III; 0.68 mg L <sup>-1</sup> (quantity released), 0.05 mg L <sup>-1</sup> (permit limit)	BCE 000809-810

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			quantity released	quantity released	location	quantity released	permit limit*		
		September 5		Unknown	Outfall III		0.21 mg L <sup>-1</sup> (quantity released), 0.05 mg L <sup>-1</sup> (permit limit)	BCE 000809-810	
		December 9	22 kg (dissolved)						
	Hg	January 5	up to 7 kg						
		January 6		0.13 mg L <sup>-1</sup>	Outfall III	0.13 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		January 8		0.013 mg L <sup>-1</sup>	Outfall III	0.013 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		January 12		0.014 mg L <sup>-1</sup>	Outfall III	0.014 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		April 25		0.028 mg L <sup>-1</sup>	Outfall III	0.028 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		May 1		0.012 mg L <sup>-1</sup>	Outfall III	0.012 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 4		0.018 mg L <sup>-1</sup>	Outfall III	0.018 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 10	18 kg	0.030 mg L <sup>-1</sup>	Outfall III	0.3 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 14		0.014 mg L <sup>-1</sup>	Outfall III	0.014 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 15		0.032 mg L <sup>-1</sup>	Outfall III	0.032 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 16		0.014 mg L <sup>-1</sup>	Outfall III	0.014 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 20		0.014 mg L <sup>-1</sup>	Outfall III	0.014 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 21		0.01 mg L <sup>-1</sup>	Outfall III	0.01 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 23		0.027 mg L <sup>-1</sup>	Outfall III	0.027 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		June 28		0.011 mg L <sup>-1</sup>	Outfall III	0.011 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		July 6		0.011 mg L <sup>-1</sup>	Outfall III	0.011 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		August 11		0.011 mg L <sup>-1</sup>	Outfall III	0.011 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
		August 21		0.023 mg L <sup>-1</sup>	Outfall III	0.023 mg L <sup>-1</sup>	0.005 mg L <sup>-1</sup>		
	Cd oxide (CdO)	November 3	unknown						
	Zn sulfate (150 g L <sup>-1</sup> )	January 7	600 kg						
	Ammonia (NH <sub>3</sub> )	March 14	unknown						
	Sulfuric Acid (H <sub>2</sub> SO <sub>4</sub> )	January 7 July 30	13,000 tonnes (50 g L <sup>-1</sup> ) 10 tonnes						
1994	As	February 9 February 9	20 kg	0.22 mg L <sup>-1</sup>	Outfall III	21 kg d <sup>-1</sup> 0.02 mg L <sup>-1</sup> ; 2.1 kg d <sup>-1</sup>	NA 0.05 mg L <sup>-1</sup> ; 5.5 kg d <sup>-1</sup>	Confirmed quantity released = 0.22 mg L <sup>-1</sup>	BCE 001324-26
		March 7		0.18 mg L <sup>-1</sup>	Outfall III			17.25 kg (quantity released), 5.4 kg (permit limit)	
		June 7 October 17 November		0.06 mg L <sup>-1</sup> unknown 0.06 mg L <sup>-1</sup> (once)	Outfall III Outfall III Outfall III			0.05 mg L <sup>-1</sup> (permit limit)	BCE 000052-53
		1994		0.10 tonnes	Outfall II				
	Cd	March 4 1994 1994		0.09 mg L <sup>-1</sup> 0.19 tonnes 0.02 tonnes	Outfall II Outfall II Outfall I				
	Hg	February 10 March 4 July 4	1.3 kg  < 1 kg	0.022 mg L <sup>-1</sup>	Outfall II	< 1 kg d <sup>-1</sup>	0.56 kg d <sup>-1</sup>		

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			quantity released	quantity released	location	quantity released	permit limit*
		August 14				0.014 mg L <sup>-1</sup>	0.01 mg L <sup>-1</sup>
		October 2		0.006 mg L <sup>-1</sup>	Outfall III		
		October 18		0.006 mg L <sup>-1</sup>	Outfall III		
		October 20		0.006 mg L <sup>-1</sup>	Outfall III		
		November		16 exceedances	Outfall III		
		December 18		0.011 (units NA)	Outfall III		
		December 19		0.009 (units NA)	Outfall III		
		December 21		0.011 (units NA)	Outfall III		
	Pb	March 4		1.50 mg L <sup>-1</sup>	Outfall II		
	Chlorine	March 5	< 1 kg				
	Zn oxide (ZnO)	October 24	unknown				
	Ammonia (NH <sub>3</sub> /N)	October 5	3,500 kg				Outfall IV; 4x permit limit
	Ammonium sulfate (NH <sub>4</sub> SO <sub>4</sub> )	June 1 June 13	2 m <sup>3</sup> unknown				
	TSS	March 4 1994		89.0 mg L <sup>-1</sup> 5791 tonnes	Outfall II Outfall I		
	Flow rate	November		all samples exceedances	Outfall I		Exceedances were "by a significant amount for all samples during the month"
	Total particulates	October 5					Sinter plant stack; 504 mg m <sup>-3</sup> (quantity released), 400 mg m <sup>-3</sup> (permit limit)
	Total Pb (air quality)	October 5					Sinter plant stack; 35.25 mg m <sup>-3</sup> (quantity released), 23 mg m <sup>-3</sup> (permit limit)
1995	As	June 25				12.5 kg d <sup>-1</sup>	11 kg d <sup>-1</sup>
	Cd	February 27 March 10 June 25				NA 102 kg d <sup>-1</sup> ; 0.001 mg L <sup>-1</sup> 4.2 kg d <sup>-1</sup>	3.9 kg d <sup>-1</sup> 60 kg d <sup>-1</sup> 0.05 mg L <sup>-1</sup> 4 kg d <sup>-1</sup>
	Cu	June 25				11.5 kg d <sup>-1</sup>	5.5 kg d <sup>-1</sup>
	Hg	February 5 February 26 March 9 March 26 March 27 April 3 April 4 April 5 May 5 May 6		0.3375 kg d <sup>-1</sup> 0.1804 kg d <sup>-1</sup> 0.2350 kg d <sup>-1</sup> 0.6768 kg d <sup>-1</sup> 0.7659 kg d <sup>-1</sup> 0.6957 kg d <sup>-1</sup> 0.9636 kg d <sup>-1</sup> 0.6624 kg d <sup>-1</sup> 0.3496 kg d <sup>-1</sup> 0.4440 kg d <sup>-1</sup>	Outfall II Outfall II Outfall II Outfall III Outfall III Outfall III Outfall III Outfall III Outfall III Outfall II Outfall II	0.34 kg d <sup>-1</sup> ; 2.8 E-06 mg L <sup>-1</sup> 0.18 kg d <sup>-1</sup> ; 1.7 E-06 mg L <sup>-1</sup> 0.24 kg d <sup>-1</sup> ; 2.2 E-06 mg L <sup>-1</sup> 0.68 kg d <sup>-1</sup> ; 6.0 E-06 mg L <sup>-1</sup> 0.77 kg d <sup>-1</sup> ; 7.0 E-06 mg L <sup>-1</sup> 0.70 kg d <sup>-1</sup> ; 8.0 E-06 mg L <sup>-1</sup> 0.96 kg d <sup>-1</sup> ; 1.1 E-05 mg L <sup>-1</sup> 0.66 kg d <sup>-1</sup> ; 7.8 E-06 mg L <sup>-1</sup> 0.35 kg d <sup>-1</sup> 0.35 kg d <sup>-1</sup>	0.15 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.15 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.15 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup> 0.15 kg d <sup>-1</sup>

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			quantity released	quantity released	location	quantity released	permit limit*
		May 7				0.44 kg d <sup>-1</sup> ; 3.7 E-06 mg L <sup>-1</sup>	0.15 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>
		May 15		0.8280 kg d <sup>-1</sup>	Outfall III	0.83 kg d <sup>-1</sup> ; 6.4 E-06 mg L <sup>-1</sup>	0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>
		May 16		0.7688 kg d <sup>-1</sup>	Outfall III	0.77 kg d <sup>-1</sup> ; 5.5 E-06 mg L <sup>-1</sup>	0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>
		May 22		1.0413 kg d <sup>-1</sup>	Outfall III	1.04 kg d <sup>-1</sup> ; 7.0 E-06 mg L <sup>-1</sup>	0.55 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>
		May 31		0.2330 kg d <sup>-1</sup>	Outfall II	0.23 kg d <sup>-1</sup> ; 1.3 E-06 mg L <sup>-1</sup>	0.15 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>
	<b>Pb</b>	June 25				63.8 kg d <sup>-1</sup>	27.5 kg d <sup>-1</sup>
	<b>Zn</b>	June 13	960 kg	960 kg d <sup>-1</sup>	Outfall III	960 kg d <sup>-1</sup> ; 0.005 mg L <sup>-1</sup>	150 kg d <sup>-1</sup> ; 5 mg L <sup>-1</sup>
		June 13				1321 kg d <sup>-1</sup>	550 kg d <sup>-1</sup>
		June 25				407.6 kg d <sup>-1</sup>	150 kg d <sup>-1</sup>
	<b>H<sub>2</sub>SO<sub>4</sub></b>	June 25	~1,000 L	3000-5000 L	Outfall III	3000-5000 L	
	<b>Slag</b>	December 7				75 tonnes	
	<b>Coal dust (suspected)</b>	May 22	unknown				
1996	<b>As</b>	January 22		0.32 kg d <sup>-1</sup>	Pond/cooling water <sup>1†</sup>	0.32 kg d <sup>-1</sup>	0.1 kg d <sup>-1</sup>
		January 28		0.18 kg d <sup>-1</sup>	pond	0.18 kg d <sup>-1</sup>	0.1 kg d <sup>-1</sup>
		February 4		0.14 kg d <sup>-1</sup>	pond	0.14 kg d <sup>-1</sup>	0.1 kg d <sup>-1</sup>
	<b>Cd</b>	January 10		0.87 kg d <sup>-1</sup>	Cooling water	0.87 kg d <sup>-1</sup>	0.5 kg d <sup>-1</sup>
		January 22		0.14 kg d <sup>-1</sup> ; 0.82 kg d <sup>-1</sup>	Pond/cooling water	0.14 kg d <sup>-1</sup> ; 0.82 kg d <sup>-1</sup>	0.1 kg d <sup>-1</sup> ; 0.5 kg d <sup>-1</sup>
		February 27	0.01 kg	3.75 kg d <sup>-1</sup>	Outfall II	3.75 kg d <sup>-1</sup>	2.75 kg d <sup>-1</sup>
	<b>Hg</b>	January 26		0.0115 kg d <sup>-1</sup>	Pond	0.01 kg d <sup>-1</sup>	0.009 kg d <sup>-1</sup>
		February 4					Slag collection pond underflow; 0.14 kg d <sup>-1</sup> (quantity released), 0.1 kg d <sup>-1</sup> (permit limit)
		February 7					Slag collection pond underflow; exceeded permit limit for Hg
		February 26		0.0199 kg d <sup>-1</sup>	Pond	0.020 kg d <sup>-1</sup>	Specified "slag pond overflow;" 0.0199 kg d <sup>-1</sup> (quantity released)

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			quantity released	quantity released	location	quantity released	permit limit <sup>5</sup>		
		February 27 <sup>4</sup>					Assumed February 27 date; specified “slag pond overflow;” 0.00118 kg d <sup>-1</sup> <sup>5</sup> (quantity released), 0.009 kg d <sup>-1</sup> (permit limit)	BCE 0000275-277. BCE 000278-280	
Pb		February 27	0.3 kg						
Zn		January 17	40,000 L (& sulfuric acid)	2074 kg	Outfall III	2074 kg d <sup>-1</sup>	150 kg d <sup>-1</sup>		
		January 22		39.66 kg d <sup>-1</sup>	Pond/cooling water	39.7 kg d <sup>-1</sup>	20 kg d <sup>-1</sup>		
		February 9		31.52 kg d <sup>-1</sup>	Pond	31.5 kg d <sup>-1</sup>	20 kg d <sup>-1</sup>		
		February 21		16.2 kg d <sup>-1</sup>	Cooling water	16.2 kg d <sup>-1</sup>	5 kg d <sup>-1</sup>		
		February 21				25 kg d <sup>-1</sup>	20 kg d <sup>-1</sup>		
		February 27	0.5 kg	35 kg d <sup>-1</sup>	Pond	35 kg d <sup>-1</sup>	20 kg d <sup>-1</sup>	Specified “slag pond overflow” Outfall II; 187.5 kg d <sup>-1</sup> (quantity released), 150 kg d <sup>-1</sup> (permit limit)	BCE 0000275-277. BCE 000278-280 BCE 000293-294; BCE 000292; BCE 000308-309; BCE 000304-307; BCE 000316, 318; BCE 000275-277, BCE 000278-280
		February 27							
TSS		January		6431 kg d <sup>-1</sup>	Pond			Specified “slag collection pond overflow;” 5000 kg d <sup>-1</sup> (permit limit)	
		February		6375 kg d <sup>-1</sup>	Pond			Specified “slag pond overflow;” 5000 kg d <sup>-1</sup> (permit limit)	BCE 0000275-277. BCE 000278-280
		February 15		3459 kg d <sup>-1</sup>	Outfall III			1925 kg d <sup>-1</sup> (permit limit)	
		February 21		6987 kg d <sup>-1</sup>	Cooling water			Specified slag furnace cooling water; 5000 kg d <sup>-1</sup> (permit limit)	
Pb fume slurry		February 26	3 m <sup>3</sup>						
Slag/slurry		May 10	25 tonnes	35 tons (estimated)	Columbia River	35 tonnes			
		November 8	35 tonnes (barren)	35 tonnes	unknown	35 tonnes		Specified Columbia River; short tons	BCE 000261-263
Na <sub>2</sub> CO <sub>3</sub>		February 27	3 m <sup>3</sup>						
NH <sub>3</sub> -N		February 9				30 mg L <sup>-1</sup>			

<sup>4</sup> Date ( day) not clear in original BC Environment memorandum; assumed to be the 27th

<sup>5</sup> Error in original BC Environment memorandum, reported quantity released does not exceed the reported permit limit; however, is noted as an exceedance

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			quantity released	quantity released	location	quantity released	permit limit*
	White solution & foam	April 7	unknown				
	White discoloration	May 23	unknown				
	White oxide dust	December 31	unknown				
1997	Cd	March 13 March 25	3,000 kg (incl. Hg, dissolved) 22 kg	40 kg	Outfall 07	40 kg d <sup>-1</sup> 22 kg d <sup>-1</sup>	3 kg d <sup>-1</sup> 3 kg d <sup>-1</sup>
		March 26		25 kg d <sup>-1</sup>	Outfall III		
	Hg	March 13 December 12 December 17	3,000 kg (incl. Cd, dissolved) 700 L (incl. Zn)	8.9 kg Unknown	Outfall 07 Outfall II	8.9 kg d <sup>-1</sup>	0.55 kg d <sup>-1</sup>
	Pb	March 13		1450 kg	Outfall 07	1450 kg d <sup>-1</sup>	17.13 kg d <sup>-1</sup>
	Zn	July 23 December 17	500 kg (as Zn slurry) 700 L (incl. Hg)	500 kg (approximate)	Outfall III		
	TSS	March 13		3200 kg	Outfall 07		
	H <sub>2</sub> SO <sub>4</sub>	May 20 July 23	Unknown (as acidic solution)	600 kg 4500 L	Outfall III Outfall III	600 kg d <sup>-1</sup>	
1998	As	March 6 March 7 June 1 June 2 November 24	5 m <sup>3</sup> (in slurry) 20.36 kg (total As) 20 kg	23 kg d <sup>-1</sup> 20 kg d <sup>-1</sup>	Outfall III Outfall II	23 kg d <sup>-1</sup> 20.36 kg d <sup>-1</sup>	15 kg d <sup>-1</sup> 15 kg d <sup>-1</sup>
	Cd	May 3 December 25 December 26	15 kg (in solution) 3 kg	15 kg d <sup>-1</sup> 6.5 kg d <sup>-1</sup> ; 0.08 mg L <sup>-1</sup>	Outfall II Outfall III Outfall II	15 kg d <sup>-1</sup> ; 0.0002 mg L <sup>-1</sup> 6.5 kg d <sup>-1</sup> ; 0.08 mg L <sup>-1</sup>	2.75 kg d <sup>-1</sup> ; 0.022 mg L <sup>-1</sup> 3 kg d <sup>-1</sup> ; 0.03 mg L <sup>-1</sup>
	Cu	July 30		15 kg d <sup>-1</sup>	Outfall II	15 kg d <sup>-1</sup>	8 kg d <sup>-1</sup>
	Tl	July 21 October 12		129 kg 100 kg	Outfall III Unknown	129 kg d <sup>-1</sup> 100 kg d <sup>-1</sup>	NA NA
	Zn	December 25 December 26	87 kg			177 kg d <sup>-1</sup> ; 2.2 mg L <sup>-1</sup>	90 kg d <sup>-1</sup> ; 0.9 mg L <sup>-1</sup>
	Slag cooling water/slag, granulated slag	August 20 October 24	~25,000 L (slag, Pb, Zn, H <sub>2</sub> O) 15 min duration	unknown unknown	Outfall II Unknown	1.9 m <sup>3</sup> 15 min	
	Granulated slag/Barren slag/slurry	January 9 April 7	1 tonne	unknown 1-1.5 tonnes	Unknown 05 sewer	1-3 m <sup>3</sup> 1 tonnes	
1999	Cd	March 24 March 25 March 27 September 22		3.53 kg d <sup>-1</sup> ; 0.040 mg L <sup>-1</sup> 4.01 kg d <sup>-1</sup> ; 0.045 mg L <sup>-1</sup> 3.32 kg d <sup>-1</sup> ; 0.040 mg L <sup>-1</sup> 6.04 kg d <sup>-1</sup> ; 0.073 mg L <sup>-1</sup>	Outfall III Outfall III Outfall III Outfall II	3.53 kg d <sup>-1</sup> ; 0.04 mg L <sup>-1</sup> 4.01 kg d <sup>-1</sup> ; 0.045 mg L <sup>-1</sup> 3.32 kg d <sup>-1</sup> ; 0.04 mg L <sup>-1</sup> 6.04 kg d <sup>-1</sup> ; 0.073 mg L <sup>-1</sup>	3 kg d <sup>-1</sup> ; 0.03 mg L <sup>-1</sup> 3 kg d <sup>-1</sup> ; 0.03 mg L <sup>-1</sup> 3 kg d <sup>-1</sup> ; 0.03 mg L <sup>-1</sup> 2.75 kg d <sup>-1</sup> ; 0.061 mg L <sup>-1</sup>

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year	constituent	spill date	<sup>1</sup> March 2003 Upper Columbia River Expanded Site Inspection Report, EPA Region 10	<sup>2</sup> February 20, 2004 Colville Confederated Tribes Briefing Document, based on documents provided by the Canadian government	<sup>3</sup> September 21, 2007 Upper Columbia River Remedial Investigation and Feasibility Study Work Plan	Additional Information from Discovery (2011)	Document Bates No.
			quantity released	quantity released	location	quantity released	permit limit*
2000		September 24				5.8 kg d <sup>-1</sup> ; 0.06 mg L <sup>-1</sup>	3 kg d <sup>-1</sup> ; 0.03 mg L <sup>-1</sup>
		September 25		5.8 kg d <sup>-1</sup> ; 0.061 mg L <sup>-1</sup>	Outfall III		
		October 7		3.48 kg d <sup>-1</sup>	Outfall II	3.48 kg d <sup>-1</sup>	2.75 kg d <sup>-1</sup>
		October 11		2.86 kg d <sup>-1</sup>	Outfall II	2.86 kg d <sup>-1</sup>	2.75 kg d <sup>-1</sup>
	TI	April 17		67.2 kg	Outfall III	67.2 kg d <sup>-1</sup> ; 0.7 mg L <sup>-1</sup>	NA
		April 18		196 kg	Outfall III	196 kg d <sup>-1</sup> ; 2.1 mg L <sup>-1</sup>	NA
		April 19		201 kg	Outfall III	201 kg d <sup>-1</sup> ; 2.1 mg L <sup>-1</sup>	NA
		April 20		136 kg	Outfall III	136 kg d <sup>-1</sup> ; 1.5 mg L <sup>-1</sup>	NA
		April 21		72.7 kg	Outfall III	72.7 kg d <sup>-1</sup> ; 0.8 mg L <sup>-1</sup>	NA
		April 22		56.0 kg	Outfall III	56 kg d <sup>-1</sup> ; 0.6 mg L <sup>-1</sup>	NA
		April 23		39.0 kg	Outfall III	39 kg d <sup>-1</sup> ; 0.4 mg L <sup>-1</sup>	NA
	Zn	October 4		165 kg d <sup>-1</sup> ; 1.90 mg L <sup>-1</sup>	Outfall II	165 kg d <sup>-1</sup> ; 1.9 mg L <sup>-1</sup>	75 kg d <sup>-1</sup> ; 1.4 mg L <sup>-1</sup>
		October 7				106 kg d <sup>-1</sup>	90 kg d <sup>-1</sup>
	Fume contaminated water	July 23		unknown	Columbia River		40 gallons (quantity released) Zn fume-contaminated water
	Cd	February 9		3.74 kg d <sup>-1</sup>	Outfall II	3.7 kg d <sup>-1</sup>	2.75 kg d <sup>-1</sup>
		February 18	10.5 kg	10.5 kg d <sup>-1</sup> ; 0.12 mg L <sup>-1</sup>	Outfall II	10.5 kg d <sup>-1</sup> ; 0.12 mg L <sup>-1</sup>	2.75 kg d <sup>-1</sup> ; 0.06 mg L <sup>-1</sup>
	TI	October 8		43 kg	Outfall III	43 kg d <sup>-1</sup>	
		October 10 <sup>6</sup>		34 kg	Outfall III	34 kg d <sup>-1</sup>	
		October 11		31 kg	Outfall III	31 kg d <sup>-1</sup>	
	Zn	February 18	350 kg	349 kg d <sup>-1</sup> ; 4.0 mg L <sup>-1</sup>	Outfall II	350 kg d <sup>-1</sup> ; 4 mg L <sup>-1</sup>	75 kg d <sup>-1</sup> ; 1.4 mg L <sup>-1</sup>
		March 31				693 µg L <sup>-1</sup>	900 µg L <sup>-1</sup>
		April 4				1810 µg L <sup>-1</sup>	900 µg L <sup>-1</sup>
	NH <sub>3</sub> / NH <sub>3</sub> -N	March 28		up to 1.9 tonnes	Outfall IV	1.9 tonnes	
	Flow rate	July 25		> 125,000 m <sup>3</sup> d <sup>-1</sup>	Outfall II		
		July 26		> 125,000 m <sup>3</sup> d <sup>-1</sup>	Outfall II		
		July 29		> 125,000 m <sup>3</sup> d <sup>-1</sup>	Outfall II		
		July 30		> 125,000 m <sup>3</sup> d <sup>-1</sup>	Outfall II		
	Low pH alarm	April 18				NA	
2001	Hg	May 8				1.42 kg d <sup>-1</sup>	0.55 kg d <sup>-1</sup>
	Zn	January 31		529.7 kg d <sup>-1</sup>	Outfall II	529.7 kg d <sup>-1</sup> ; 6.6 mg L <sup>-1</sup>	75 kg d <sup>-1</sup> ; 1.4 mg L <sup>-1</sup>
		November 26		unknown	unknown	NA	90 kg d <sup>-1</sup>
	Oil	May 27	10 L			22 L	Outfall III; 0.9 mg L <sup>-1</sup> (permit limit)
	LC50 bioassay	December 3		failed	Outfall II		Also failed, Stoney Creek
2002	Cd	October 21		5.4 kg d <sup>-1</sup>	Outfall II		2.75 kg d <sup>-1</sup> (permit limit)

<sup>6</sup> October 10 discharge may be October 9; unclear from Cominco report, refs. BCE 000025-26, BCE 000604, BCE 000605

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			quantity released	quantity released	location	quantity released	permit limit*	
	LC50 bioassay	February 19		failed	Outfall IV		Also failed, Stoney Creek	BC 01143-52, BC 01165, BC 01167, BC 00574
		June 19		failed	Outfall II		Also failed, Stoney Creek	BC 01114-24
		October 29					Failed, Stoney Creek	BC 00517-529
	pH	January 15		8.3	Outfall IV		pH 8.0 (permit limit)	BC 01166, BC 01153-57, BC 00575
2003	Zn	January 8		99.5 kg d <sup>-1</sup>	Outfall II	99.5 kg d <sup>-1</sup>	75 kg d <sup>-1</sup>	
2004								
2005								
2006								
2007								
<p>*The assumption is that the permit limits given in the Work Plan apply to the values reported in the CCT Briefing Document. In most cases, where data are available for both sources the values are the same. However, different permit limits for the same constituent during the same year implies that the spill location may be different, information that was not provided in the Work Plan.</p> <p><sup>†</sup>1 tonne = 1000 kg (also known as a short ton)</p> <p>** = surface spills, potential for groundwater contamination</p> <p><sup>††</sup> pond = slag collection pond; cooling water = slag furnace cooling water</p>								
	No information provided							
	Highlighted difference between sources. Many differences appear to be transcription errors, that is values are off by an order of magnitude, units are partially missing, or date for which data are reported varies by one day.							